

Toothbrush - has extra tuft(s) on carrier in brush head which can be adjusted to protrude from remaining tufts

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#### Abstract

In the brush head (2) in a toothbrush, at least one bristle carrier (10) is configured to be adjustable. Thus, it can be moved transversely to the brush head (2), such that a bristle tuft (6) borne by it protrudes from the bristle surface (9) formed by the remaining bristle tufts (3, 4, 5, 7, 8) and hence, in this protruding position, is particularly suitable for cleaning the interdental spaces.

## Description

The invention is based on a toothbrush with a brush head featuring numerous bristle tufts, with the ends of the bristles forming a bristle surface.

Protruding type toothbrushes are generally well-known and are commonly used. These may be mechanically- or electrically-powered toothbrushes. An even bristle surface is particularly beneficial for cleaning the chewing surfaces of the molar teeth. It would be more advantageous for cleaning the narrow interdental spaces, however, if at least one bristle tuft protruded from the bristle surface, which, however, would have an unfavorable effect on cleaning the chewing surfaces.

The underlying problem of the disclosure is to develop a toothbrush of the foregoing type, such that it is equally suitable for cleaning chewing surfaces and interdental spaces.

According to the present disclosure this problem is solved in a very simple manner by providing at least one bristle tuft on a bristle carrier which is adjustable within the brush head in order to be able to protrude its bristle ends from the bristle surface.

Due to this adjustability, the toothbrush can be adjusted during usage and can, for example, be utilized for cleaning the interdental spaces with one setting and, with the other setting, for cleaning the chewing surfaces and easily accessible tooth surfaces.

The adjustability of at least one bristle carrier can be achieved in a variety of ways. One very simple alternative is to cradle the adjustable bristle carrier in a shaft within the brush head such that it can slide and can be locked in at least two positions.

The bristle carrier can be adjusted, for example, by a lever on the grip of the toothbrush if an adjusting eccentric and eccentric shaft are provided, positioned against the bristle carrier. The eccentric shaft must then extend from the grip to the brush head.

The bristle carrier is forced into its protruding position by the eccentric and can likewise be forced back again into its home position, if, according to another

modification of the present disclosure, the eccentric on the eccentric shaft engages with a guide slot on the bristle carrier.

It is particularly easy to create the adjustability if the adjustable bristle carrier is so arranged in the brush head as to be able to be twisted obliquely to the main axis of the toothbrush. In this embodiment no control elements need to be built into the toothbrush or the brush head. A simple twist of the bristle carrier is adequate, preferably from the side away from the bristle tufts.

Likewise, it is very easy to make the bristle carrier adjustable if the adjustable bristle carrier can be adjusted by means of a thread set transversely to the bristle surface.

The appearance of the toothbrush bristles can be particularly markedly modified if, in accordance with another modification of the present disclosure, the toothbrush features several adjustable bristle carriers.

The present disclosure allows for numerous embodiments. A number of these are shown in the drawing and are described in the following, for further clarification of the basic principle. These show:

FIG. 1: a lateral view of a toothbrush according to the present disclosure,

FIG. 2: a cross-section of a brush head of a second embodiment of the present disclosure,

FIG. 3: the cross-section according to FIG. 2, with its bristle carrier in a modified position,

FIG. 4: a lateral view of a further embodiment of the brush head,

FIG. 5: a lateral view of a fourth embodiment of the brush head,

FIG. 6: the brush head according to FIG. 5, with its bristle carrier in a different position,

FIG. 7: a lateral view of a fifth embodiment of the brush head,

FIG. 8: the brush head according to FIG. 7, with its bristle carrier in a different position.

The toothbrush shown in its entirety in FIG. 1 has a brush head 2 with a number of bristle tufts 3-8 at the end of a grip 1. With the exception of bristle tuft 6, each of the bristle tufts 3, 4, 5, 7, 8 ends in a bristle surface 9. Bristle tuft 6 protrudes from this bristle surface 9 and is thus particularly suitable for finding its way into interdental spaces and cleaning the same.

Bristle tuft 6 is arranged on an adjustable bristle carrier 10, which is screwed into a threaded hole 11 going through the brush head 2. Thanks to the thread 12, by turning the bristle carrier 10, it can be moved from the position shown into the brush head 2, until the end of bristle tuft 6 aligns with the bristle surface 9.

FIG. 2 shows a sectional view of brush head 2 which has a trough-like shaft 13, into which the bristle carrier 10 has been relocatably inserted. This bristle carrier 10 carries bristle tufts 6, 6a, 6b, 6c. Inside shaft 13, it has a guide slot 14 which engages with an eccentric 15 of an eccentric shaft 16 running in a longitudinal direction to brush head 2. This eccentric shaft 16 can, for example, lead to the grip 1 or to the front end of the brush head 2 and can feature a lever (not shown) there, with which it can be turned.

If the eccentric shaft 16 is turned 180 degrees into the position shown in FIG. 3, the eccentric 15 is directed upwards. Thus, the eccentric has lifted the bristle carrier 10 twice as high as its eccentricity within the shaft 13, such that the bristle tufts 6, 6a, 6b, 6c protrude accordingly above the remaining bristle tufts (not shown).

FIG. 4 shows that also a number of adjustable bristle carriers 10, 17, 18 can be arranged in the brush head 2, whereby in this embodiment, the central bristle carrier 10

can be adjusted to a greater degree than the others. The eccentric shaft 16 shown in FIG. 2 and 3 can be provided for the adjustment, which then has an eccentric 15 for each adjustable bristle carrier 10, 17, 18.

According to FIG. 5 and 6, a bristle carrier 19 within the shaft 13 can be adjusted by means of an adjusting screw 20 screwed into it. Its bristle tuft 6 projects sharply, in order to be able to reach the interdental spaces particularly well.

In the embodiment according to FIG. 7 and 8, the shaft 13 runs obliquely to the longitudinal extension direction of the toothbrush and its brush head 2. A bristle carrier 21 is arranged in the shaft 13 in a way that it can only be twisted. In FIG. 7, in turn, the ends of the bristle tufts 5, 6, 7 form the bristle surface 9. If the bristle carrier 21 is turned 180 degrees, the tip of the bristle tuft 6 extends from the bristle surface 9 and assumes the protruding position shown in FIG. 8.

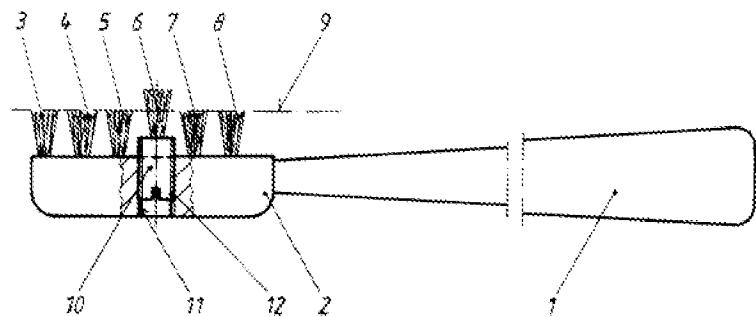
#### Reference Number List

- 1 Grip
- 2 Brush head
- 3-8 Bristle tuft
- 9 Bristle surface
- 10 Bristle carrier
- 11 Threaded hole
- 12 Thread
- 13 Shaft
- 14 Guide slot
- 15 Eccentric
- 16 Eccentric shaft
- 17-19 Bristle carriers
- 20 Adjusting screw
- 21 Bristle carrier

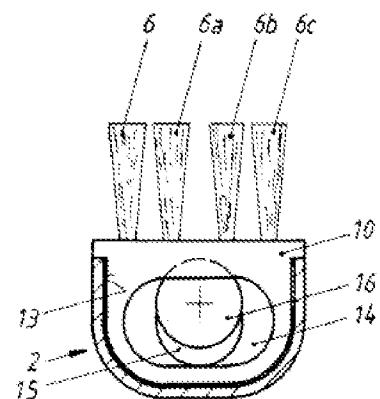
Claims

1. A toothbrush with a brush head featuring several bristle tufts, where the ends of the bristles form a bristle surface, characterized in that at least one bristle tuft (6), in order to be able to project its bristle ends from the bristle surface (9), is arranged on a bristle carrier (10; 17, 18, 19, 21) which is adjustable within the brush head (2).
2. A toothbrush according to Claim 1, characterized in that the adjustable bristle carrier (10, 17, 18, 19) is cradled in a shaft (13) of the brush head (2), such that it can slide and can be locked in at least two positions.
3. A toothbrush according to Claim 2, characterized in that an eccentric shaft (16) with an eccentric (15), which is located in contact with the bristle carrier (10), is provided for adjusting the bristle carrier (10).
4. A toothbrush according to Claim 3, characterized in that the eccentric (15) of the eccentric shaft (16) is seated in a guide slot (14) on the bristle carrier (10).
5. A toothbrush according to at least one of the preceding claims, characterized in that the adjustable bristle carrier (21) is aligned such that it can be twisted obliquely to the main axis of the toothbrush in the brush head (2).
6. A toothbrush according to at least one of the preceding claims, characterized in that the adjustable bristle carrier (10) can be adjusted by means of a thread (12) transversely to the bristle surface (9).
7. A toothbrush according to at least one of the preceding claims, characterized in that it features a number of adjustable bristle carriers (10, 17, 18).

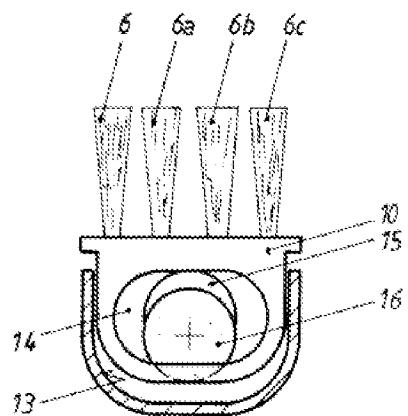
[FIG. 1]



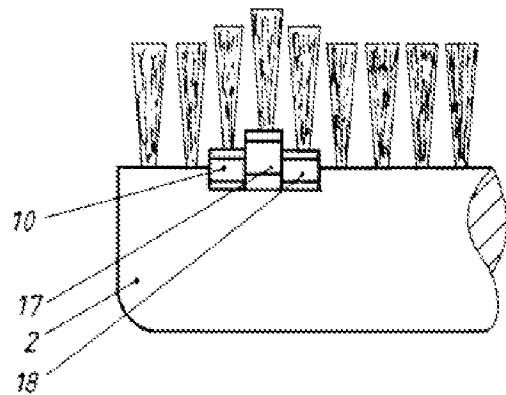
[FIG. 2]



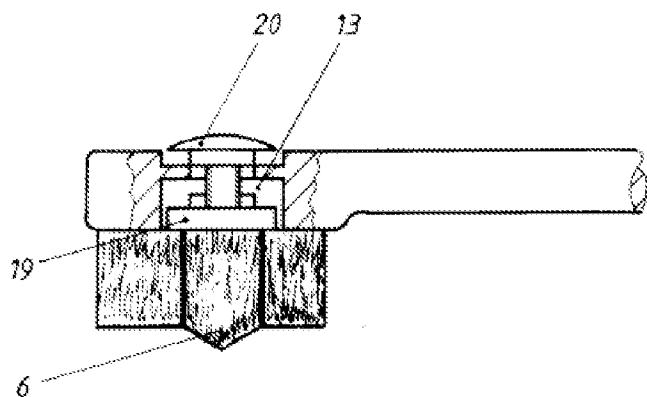
[FIG. 3]



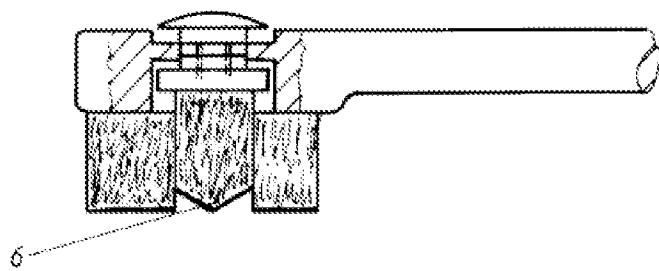
[FIG. 4]



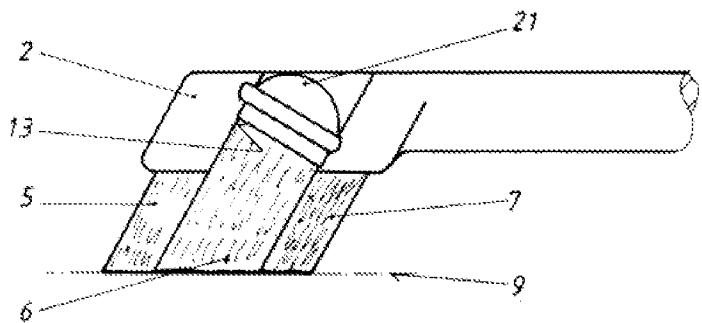
[FIG. 5]



[FIG. 6]



[FIG. 7]



[FIG. 8]

